# EXHIBIT 7

# 6.6L DURAMAX LML DURAMAX LML SPECS & INFO

The LML Duramax was released for 2011 model General Motors & Chevrolet HD trucks. The latest version of the 6.6L Duramax requires advanced emissions equipment, including the use of diesel exhaust fluid injection, to reduce nitrogen oxide emission levels by 63 percent over LMM powered trucks. This allows the LML to exceed currently mandated federal emissions requirements and potentially meet future requirements as well. The LML was replaced for the 2017 model year by the next generation Duramax L5P.

Duramax Maintenance Schedule & Service Information

6.6L Duramax L5P Specs

**Duramax LML Emissions System** 

Common Duramax Problems

6.6L Duramax LGH

Allison 1000 Ratios & Specs

### **DURAMAX RECEIVES SCR SYSTEM, DEF**

The Duramax LML introduced the "9th injector" system in order to supply fuel to the DPF during regeneration. This is opposed to the previous generation's (LML) late/post injection technique. The result eliminated cylinder washing concerns and permitted the use of up to B20 biodiesel. The implementation of the SCR system, which requires a constant supply of diesel exhaust fluid (DEF), was met with heavy scrutiny. However, this technology actually allows for an advantageous engine calibration to be executed, reducing the duty cycle of DPF regenerations and providing significant improvements in fuel economy. DEF is not particularly costly and owners incur noticeable fuel savings even while factoring in the cost of exhaust fluid. GM's official statement is that fuel mileage increased 11% over the previous generation LMM engine.

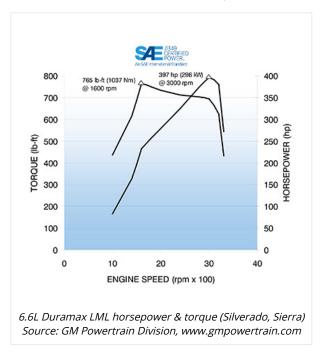
The LML is said to have been engineered using 60% newly designed components not carried over from a previous generation Duramax. This includes an upgraded engine block casting, oil pump, high strength pistons and connecting rods, main bearing design, and re-routed oil passage circuit. Rated at 397 horsepower and 765 lb-ft of torque, the engine is significantly more powerful than any prior Duramax. General Motors blindsided Ford with the release of these figures, which were revealed shortly after Ford's 390 hp/735 lb-ft 6.7L Power Stroke became available. A concerned Ford quickly acted to increase the Power Stroke's available horsepower and torque rating, issuing a free performance upgrade to owners which would re-calibrate the engine to the tune of 400 horsepower and 800 lb-ft.

#### 6.6L DURAMAX LML SPECS

Engine:	6.6L Duramax LML, 90 degree V8 diesel		
Assembly Location:	DMAX assembly plant in Moraine, Ohio		
Years Produced:	2011 - 2016 model years		
VIN Code:	8 (8th digit of VIN)		
Displacement:	403 cubic inches, 6.6 liters		
Assembly Site:	DMAX engine plant, Moraine, Ohio		
Head/Block Material:	Aluminum cylinder heads, cast iron engine block		
Compression Ratio:	16.0 : 1		
Firing Order:	1-2-7-8-4-5-6-3		

Bore:	4.055" (103 mm)			
Stroke:	3.897" (99 mm)			
Aspiration:	Turbocharged & intercooled - Garrett variable vane (VVT), variable geometry turbocharger (VGT) with air-to-air intercooler			
Injection:	Direct injection, 2000 bar (~30,000 psi) Bosch high pressure common rail w/ CP4 injection pump and Piezo injectors			
Valvetrain:	OHV (overhead valve), 4 valves per cylinder, mechanical roller lifters			
Oil Capacity:	10 quarts w/ filter (9.5 liters)			
Fuel Compatibility:	Ultra low sulfur diesel (ULSD) or max B20 biodiesel blend			
Max Shift RPM:	3,000 rpm			
Peak Horsepower:	397 hp @ 3,000 rpm			
Peak Torque:	765 lb-ft @ 1,600 rpm			
Engine Dimensions:	Length	Width	Height	
	Approx 30"	Approx 30"	Approx 32"	

# **DURAMAX LML HORSEPOWER & TORQUE GRAPH**



# **LML DURAMAX EMISSIONS SYSTEM**

• Diesel particulate filter (DPF) nearly eliminates emissions of diesel soot. Active regeneration programming cleans the DPF periodically (estimated regen period every 700 miles, 300 miles less then previous systems, under normal operating conditions) by injecting diesel fuel into the exhaust stream via a "downstream injector", completely burning off soot captured in the DPF.

- Exhaust gas recirculation (EGR) with EGR cooler.
- Selective catalyst reduction (SCR) utilizing diesel exhaust fluid injection (DEF). DEF is a urea based fluid injected into the SCR to further reduce nitrogen oxide emissions. A DEF tank will need to be filled approx. every 5,000 miles (under normal operating conditions). Engine will enter into a limp-mode if DEF tank is empty.
- EGR cooler bypass to help eliminate soot deposits in the EGR cooler/system, which could potentially cause engine problems.

#### **LML DURAMAX DEF**

The LML Duramax is equipped with a SCR system that requires the use of DEF (diesel exhaust fluid). DEF is injected into the exhaust stream where a chemical reaction occurs that reduces NOx emissions. The DEF tank is approximately 5 gallons (18.9 liters). On pickup trucks, the DEF tank fill nozzle is located on the passenger side, under the hood and is sealed by a blue cap. On vans, the DEF tank fill nozzle is located in the fuel fill door, and is also sealed by a blue cap. The DEF system will illuminate a warning indicator in the instrument panel when the DEF fluid levels range is estimated to be 1,000 miles. Subsequent warnings will follow.

- If the DEF fluid level is depleted, an "EXHAUST FLUID EMPTY" notification will be displayed on the instrument panel. Upon restart, the truck will be speed limited to 55 mph. If the tank remains empty, speed will be limited to 4 mph after the second refueling. Performance may also suffer when the truck enters this mode.
- If the DEF fluid quality is detected to be low, an "EXHAUST FLUID QUALITY POOR" notification will be displayed on the instrument panel. After 200 miles of driving with poor quality DEF, the truck will be speed limited to 55 mph. If the system continues to detect low quality DEF, speed will be limited to 4 mph upon the next refueling.
- If the DEF system detects that it requires service, a "SERVICE EXHAUST FLUID SYSTEM" notification will be displayed on the instrument panel. Failure to have the system serviced within 200 miles will result in speed limited to 55 mph upon the next startup, and 4 mph on the next refuel.

One of the biggest gripes regarding the Duramax LML is the location of the DEF tank and DEF fill spout. The DEF tank is located roughly beneath the front passenger with several inches of the tank vulnerably exposed beneath the level of the body. In order to add DEF to the tank, the driver must access the fill spout located against the passenger side firewall (under the hood). The height required to access the under-hood mounted DEF fill as well as the corrosive nature of DEF have been the source of concerns - a full-size, one ton, four wheel drive pickup is relatively tall and ease-of-access is more or less dependent on a person's height. Nonetheless, Duramax owners won't have to worry about accidentally putting DEF in their fuel tank, as the two fill locations are side-by-side in competitor's trucks.

#### **NOX SENSOR FAILURES & SCR/DEF RELATED PROBLEMS**

Many 2011 model year Duramax LMLs endured ongoing reliability problems with the SCR and DEF systems, which included DEF sensor, NOx sensor, and DEF pump failures in addition to problems with exhaust fluid freezing in cold weather. By far, the predominant re-occurring problem was failure of the NOx sensors (commonly P20EE/P207F trouble diagnostic codes). Repeated NOx sensor prompted GM to make changes to the sensors and issue a 10 year, 110,000 mile warranty on the updated sensor. Owners of what GM considers to be affected VIN numbers were issued correspondences regarding the warranty information, however not all 2011 MY Duramax owners are covered by this change. It is unknown how many trucks are affected and what the cut-off is for those protected by the updated warranty - if you are experiencing issues, we suggest pressing the issue with your local dealership. We've received reports of similar problems with some 2012 MY pickups (all of which were repaired under warranty), but with nowhere near the frequency of 2011 MY engines. The concern seems to have been addressed appropriately and 2012+ MY Duramax LMLs should not experience repeated issues

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